β_2 Microglobulin in Lichen Planus

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The aim of the present study was to examine idiopathic lichen planus for possible changes in the serum concentration of the immunological marker β_2 microglobulin (β_2m), a component of HLA antigens. It was shown that serum levels of β_2m were not different in lichen planus from those in controls. Although these findings do not support major systemic immunopathological changes in lichen planus, they do not exclude the involvement of local immune mechanisms.

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Introduction.

Lichen planus is a mucocutaneous disease of unknown etiology, although there is evidence for an immunopathogenesis in at least some cases.[1] A few patients have lichen planus associated with diseases which have an established immunological basis, such as lupus erythematosus,[2] pemphigoid,[3] thymoma with immunodeficiency,[4] and myasthenia gravis.[5] Furthermore, a lichenoid reaction often complicates graft *versus* host disease – a T lymphocyte-mediated reaction.[6] Lichenoid reactions are also occasionally drug-induced, when, at least in some instances, immunological mechanisms may be involved.[7]

There is a prominent T lymphocyte infiltrate in the lesions of lichen planus,[8-11] but studies of lymphocyte reactivity have given equivocal results.[12,13] The association of lichen planus with the histocompatibility antigen HL-A3[14] further suggests an immunological basis for this disease.

One component of HLA antigens is a low molecular weight protein, β_2 microglobulin (β_2m), which is released by lymphocytes,[15,16] particularly when they are activated.[17] The concentration of β_2m in the serum is increased in various disorders but especially in those with an immunological basis.[18-21]

The purpose of the present study was to examine lichen planus for possible changes in the serum concentration of β_2m, changes which might afford further evidence for an immunopathogenic basis for this disease.

Materials and methods.

Study group. – The study group consisted of 20 Caucasians with idiopathic lichen planus, and 22 age- and sex-matched controls. All patients had oral lesions of lichen planus with a histologically confirmed diagnosis; four patients also had cutaneous lichen planus. Patients with a history of recent drug usage were excluded from this study in order to avoid inclusion in this series of patients with lichenoid reactions. Since serum β_2m levels are increased in the presence of renal disease,[22] only patients with a normal creatinine clearance were included in the study.

β_2 microglobulin assay. – Serum was collected and stored in aliquots at −20°C. β_2m was assayed in duplicate by a solid phase radio-immunoassay,* as previously described by Vincent and Revillard.[23]

Statistical analyses. – Results were analyzed by an analysis of variance (Kruskal-Wallis test) and Student's *t* test and are expressed as mean serum β_2m concentration in mg/l, plus or minus standard deviation (S.D.).

Results.

Serum β_2m concentrations in patients with lichen planus (mean 1.65 mg/l ± S.D. 0.63, Fig.) were not significantly different from levels in controls (1.35 mg/l ± 0.36; p = 0.059). There was also no apparent relationship between the serum β_2m levels and the presence of cutaneous involvement in lichen planus.

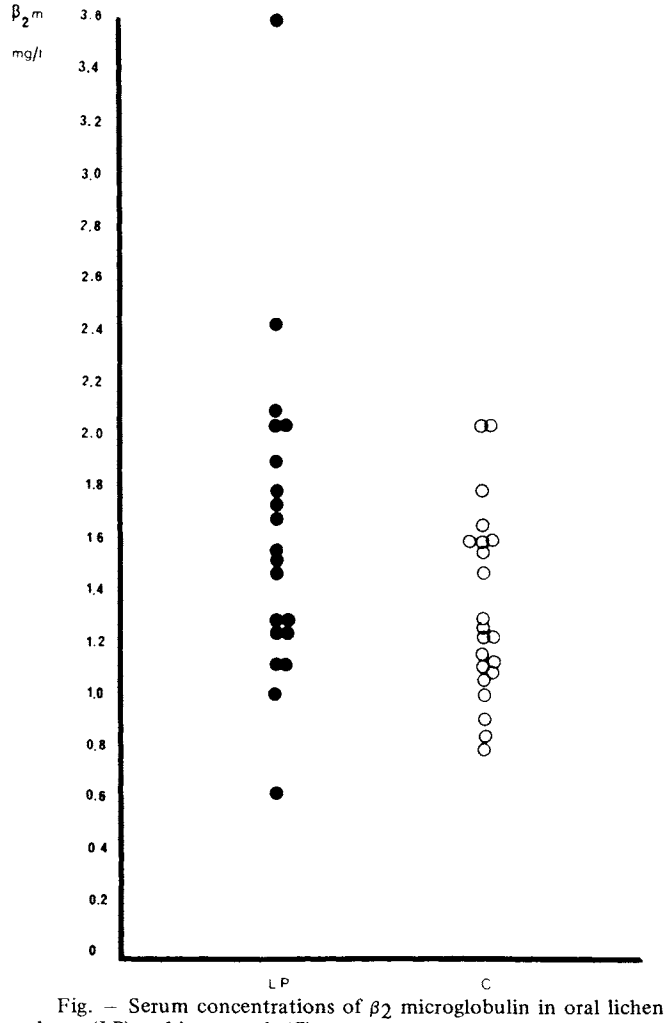

Fig. – Serum concentrations of β_2 microglobulin in oral lichen planus (LP) and in controls (C).

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*β_2 microtest, Pharmacia, Hounslow, U.K.

Discussion and conclusions.

These results indicate that serum concentrations of β_2 microglobulin (β_2m) in patients with idiopathic lichen planus were not significantly different from the levels in matched controls.

β_2m concentrations are increased in the serum in various disorders, particularly in those with immunological etiology, such as some autoimmune,[19,21,24] granulomatous,[20,25,26] and lymphoproliferative[27,28] diseases. Serum β_2m levels do not appear to have been examined in lichen planus or, indeed, in many cutaneous or mucosal diseases,[29] although there are increased serum β_2m concentrations in lupus erythematosus,[21] Behcet's syndrome,[30] and recurrent aphthous stomatitis.[30]

Minor changes in serum concentrations of immunoglobulins have been reported in lichen planus,[31-34] but there are no consistent significant abnormalities in the serum concentrations of any immunoglobulins[35] or of complement.[31] Furthermore, although complement components, fibrin and immunoglobulins, particulary IgM, may be deposited at the epithelial-connective tissue junction in the lesions of lichen planus,[36-38] these findings are not specific to this disease.

Studies of T lymphocyte function in lichen planus have given equivocal results[12,13,39] which have not convincingly demonstrated changes in cell-mediated immune responses in lichen planus, although there clearly is a T lymphocyte infiltrate in the lesions.[8-11] The occurrence of a lichenoid reaction as a complication of graft *versus* host disease[6] indicates that at least some cases of lichen planus are probably immunologically mediated, presumably involving cell-mediated immune responses.

The present results demonstrate no significant changes which in serum β_2 microglobulin concentrations in idiopathic lichen planus are consistent with previous failures to demonstrate significant systemic immunopathological changes in lichen planus, but do not, of course, exclude the involvement of mucocutaneous local immune mechanisms in the pathogenesis of this disease.

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